

IN THE CLAIMS

Please cancel claims 1-30 without prejudice and add new claims 31-60 as follows:

1. (Cancelled) A device for assisting airplane in intercepting a segment (S3) of a flight path (T) situated in a horizontal plane, said device (1) being on board the airplane and
5 comprising:

- first means (4) for determining parameter values of the airplane; and
- first display means (5) for presenting the following on at least one display screen (6):

- at least said flight path segment (S3) in the horizontal plane that is to be
10 intercepted; and
- a first symbol (7) illustrating the position of the airplane in the horizontal plane relative to said flight path;

characterized in that said first means (4) determine at least one ground speed vector representative of the speed of the airplane relative with respect to the ground, and in that said
15 first display means (5) are capable of presenting, in addition, the following on said display on said display screen (6):

- a first indicator means (10) for indicating ground speed and corresponding to a first rectilinear section (11) in said horizontal plane, said first indicator means (10) being connected to said first symbol (7), being of angular orientation that
20 corresponds to the direction of said ground speed vector, and being of length that:
 - is proportional to the modulus of the ground speed vector, when said ground speed vector is greater than a predetermined value; and
 - is constant and proportional to the modulus of said predetermined value, when said ground speed is less than or equal to said predetermined value;
- second indicator means (12 for indicating) interception approach and
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corresponding to a second rectilinear section (13) in said horizontal plane, one end of said second rectilinear section (13) extending said first rectilinear section (11) towards said flight path segment (S3) to be intercepted and said second section (13) being of length that adjusts automatically so that its other end connects to a third indicator means (14); and

- said third indicator means (14) for indicating interception turn, corresponding to a curved portion comprising at least one circular arc (15, 15A, 15B) in said horizontal plane, one end of said curve portion extending to said second rectilinear section (13) tangentially, and its other end being connected tangentially to said flight path segment (S3) to be intercepted.

2. (Cancelled) A device according to claim 1, characterized in that said first display (5) present said second indicator means (12) on said display screen (6) solely:

- if a segment (S3) of the flight path (T) is to be found in the direction of said first rectilinear section (11) of the first indicator means (10); and
- if said segment (S3) is situated at a distance less than a predetermined distance first rectilinear section (11).

3. (Cancelled) A device according to claim 1, characterized in that said circular arc (15, 15A, 15B) of the third indicator means (14) has a radius (R) that depends on the speed of the airplane.

4. (Cancelled) A device according to claim 3, characterized in that said circular arc (15, 15A, 15B) of the third indicator means (14) has a radius that depends on the capabilities of the airplane.

5. (Cancelled) A device according to claim 4, characterized in that said circular arc (14, 15A, 15B) of the third indicator means (14) is capable of being deformed to take account of wind strength and direction.

6. (Cancelled) A device according to claim 5, characterized in that said first display means (5) present said third indicator means (14) on said display screen (6), solely:

- if a segment (S3) of the flight path (T) is to be found in the direction of said second rectilinear section (13) of the second indicator means (12);
- if said segment (S3) is situated at a distance that is less than a predetermined distance from said second rectilinear section (13); and
- if the flight-plan constraints make an interception maneuver possible.

7. (Cancelled) A device according to claim 6, characterized in that it further comprises second means (16) for detecting an obstacle, and in that said first display means (5) are additionally capable of presenting on said display screen (6), at least one second symbol (17) illustrating the position of said obstacle in said horizontal plane.

8. (Cancelled) A system for assisting an airplane in intercepting and following a flight path segment situated in a horizontal plane, the system being characterized in that it is on board the airplane and comprises:

- a device (1) for assisting in intercepting a flight path, such as the device specified in claim 1; and
- a device (3) for assisting in following a flight path.

9. (Cancelled) A system according to claim 8, characterized in that said device (3) for assisting in following a flight path comprises:

- third means (18) for determining any lateral deviation of the airplane in the horizontal plane from a flight path segment, and for determining tolerated lateral margins on either side of said flight path segment in the horizontal plane; and
- second display means (5) suitable for presenting the following on a display screen (6):
 - a constant lateral deviation scale (20);
 - fourth indicator means (22) for indicating actual lateral deviation, corresponding to a straight line segment (23) provided on said scale (20) and illustrating the lateral deviation of the airplane relative to the flight path segment (S3) to be followed; and
 - fifth indicator means (24) for indicating excessive lateral deviation, which fifth means appear on said scale when the airplane is approaching one of said lateral margins and is at a predetermined distance therefrom.

10. (Cancelled) A system according to claim 9, characterized in that said constant scale (20) presents a size that is constant during all stages of airplane flight, by automatically adjusting the ratio between real distances and their representations on the display screen (6).

11. (Cancelled) A system according to claim 10, characterized in that said straight segment (23) of said fourth indicator means (22) may be inclined.

12. (Cancelled) A system according to claim 11, characterized in that said fourth indicator means (22) changes shape on reaching its limit.

13. (Cancelled) A system according to claim 12, characterized in that said fifth indicator means (24) flashes.

14. (Cancelled) A system according to claim 13, for assisting in interception and following a flight path (T) that comprises a plurality of segments (S1, S2, S3, S4), the system being characterized in that said second further present on said display screen (6) a sixth indicator means for indicating change of segment in the flight path to be followed.

5 15. (Cancelled) A system according to claim 14, characterized in that said second display means (5) further present on said display screen (6) a seventh indicator means (28) for indicating any tendency to lateral drift speed.

16. (Cancelled) A system according to claim 15, characterized in that said first display means (5) of the device (1) for assisting in intercepting a flight path, and said second display means (5) of the device (3) for assisting in following a flight path, form parts of a single display unit (5).

10 17. (Cancelled) A system according to claim 16, characterized in that it further comprises information transmission means (37) suitable for simultaneously connecting said first means (4) of said device (1) for assisting in intercepting a flight path and said third means (18) of said device (3) for assisting in following a flight path to an automatic pilot (36) of the airplane, in order to transmit information.

18. (Cancelled) A device according to claim 2, characterized in that said circle arc (15, 15A, 15B) of third means of indication (14) has a radius (R) depending on the speed of the aircraft.

20 19. (Cancelled) A device according to claim 1, characterized in that said circle arc (15, 15A, 15B) of the third means of indication (14) includes a radius depending on the aircraft capacities.

20. (Cancelled) A device according to claim 2, characterized in that said circle arc (15, 15A, 15B) of the third means of indication (14) includes a radius depending on the aircraft

capacities.

21. (Cancelled) A device according to claim 1, characterized in that said circle arc (14, 15A, 15B) of the third means of indication (14) may be deformed to take into consideration the intensity and direction of the wind.

5 22. (Cancelled) A device according to claim 1, characterized in that said first means of display (5) present said third means of indication (14) on said display screen (6) only:

- if a segment (S3) of flight path (T) is in the direction of said second rectilinear section (13) of the second means of indication (12);
- if this segment (S3) is at a distance that is less than a predetermined distance with respect to said second rectilinear section (13); and
- if the demands of the flight plan make an interception maneuver possible.

10 23. (Cancelled) A device according to claim 1, characterized in that it includes, in addition, second means (16) for detecting an obstacle, and in that said first means of display (15) are liable to present, also on display screen (6), at least a second symbol (17) illustrating the position of said obstacle in said horizontal plane.

15 24. (Cancelled) A system according to claim 9, characterized in that said straight segment (23) of said fourth means of indication (22) may be inclined.

25. (Cancelled) A system according to claim 9, characterized in that said fourth means of indication (22) changes shape when reaching its limit.

20 26. (Cancelled) A system according to claim 9, characterized in that said fifth means of indication (24) is flashing.

27. (Cancelled) A system according to claim 9, to assist with the interception and follow-up of a flight path (T) including a multitude of segments (S1, S2, S3, S4), characterized in that said second means of display (5) also present, on said display screen (6), a sixth means

of indicating a change of flight path segment to follow.

28. (Cancelled) A system according to claim 9, characterized in that second means of display (5) present, in addition on said display screen (6), a seventh means of indication (28) of the lateral speed tendency.

5 29. (Cancelled) A system according to claim 9, characterized in that said first means of display (5) of device (1) assisting with interception and said second means of display (5) of device (3) assisting with follow-up are part of one and the same display unit (5).

10 30. (Cancelled) A system according to claim 9, characterized in that it also includes means of transmitting information (37) liable to connect both said first means (4) of said device (1) assisting with interception and said third means (18) of said device (3) of follow-up assistance to an autopilot (36) on the aircraft for the transmission of information.

31. (New) A device for assisting an airplane in intercepting a segment (S3) of a flight path (T) situated in a horizontal plane, said device (1) being on board the airplane and comprising:

- first means (4) for determining parameter values of the airplane; and
 - first display means (5) for presenting the following on at least one display screen (6);
 - at least said flight path segment (S3) in the horizontal plane that is to be intercepted; and
 - a first symbol (7) illustrating the position of the airplane in the horizontal plane relative to said flight path (T);
- characterized in that said first means (4) determine at least one ground speed vector representative of the speed of the airplane relative to the ground, and in that said first display means (5) are capable of presenting, in addition, the following on said display screen (6);
- first indicator means (10) for indicating ground speed and corresponding to a first rectilinear section (11) in said horizontal plane, said first indicator means (10) being connected to said first symbol (7), being of angular orientation that corresponds to the direction of said ground speed vector, and being of length that:
 - is proportional to the modulus of the ground speed vector, when said ground speed vector is greater than a predetermined value; and
 - is constant and proportional to the modulus of said predetermined value, when said ground speed is less than or equal to said predetermined value;
 - second indicator means (12) for indicating interception approach and corresponding to a second rectilinear section (13) in said horizontal plane, one end of said second rectilinear section (13) extending said first rectilinear section (11)

towards said flight path segment (S3) to be intercepted, and said second section (13) being of length that adjusts automatically so that said other end connects to a third indicator means (14); and

• said third indicator means (14) for indicating interception turn, corresponding to a curved portion comprising at least one circular arc (15, 15A, 15B) in said horizontal plane, one of the ends of said curved portion extending said second rectilinear section (13) tangentially, and its other end being connected tangentially to said flight path segment (S3) to be intercepted.

32. (New) A device according to claim 31, characterized in that said first display (5) presents said second indicator means (12) on said display screen (6) solely:

- if a segment (S3) of the flight path (T) is to be found in the direction of said first rectilinear section (11) of the first indicator means (10); and
- if said segment (S3) is situated at a distance less than a predetermined distance from said first rectilinear section (11).

33. (New) A device according to claim 31, characterized in that said circular arc (15, 15A, 15B) of said third indicator means (14) has a radius (R) that depends on the speed of the airplane.

34. (New) A device according to claim 33, characterized in that said circular arc (15, 15A, 15B) of the third indicator means (14) has a radius that depends on the capabilities of the airplane.

35. (New) A device according to claim 34, characterized in that said circular arc (15, 15A, 15B) of the third indicator means (14) is capable of being deformed to take account of wind strength and direction.

36. (New) A device according to claim 35, characterized in that said first display means (5) present said third indicator means (14) on said display screen (6), solely:

- if a segment (S3) of the flight path (T) is to be found in the direction of said section rectilinear section (13) of the second indicator means (12);
- if said segment (S3) is situated at a distance that is less than a predetermined distance from said second rectilinear section (13); and
- if the flight-plan constraints make an interception maneuver possible.

37. (New) A device according to claim 36, characterized in that it further comprises second means (16) for detecting an obstacle, said first means (5) being additionally capable of presenting on said display screen (6) at least one second symbol (17) illustrating the position of said obstacle in said horizontal plane.

38. (New) A system for assisting an airplane in intercepting and following of a flight path segment situated in a horizontal plane, the system being characterized in that it is on board the airplane and comprises:

- a device (1) for assisting in intercepting a flight path, such as the device specified in claim 1; and
- a device (3) for assisting in following a flight path.

39. (New) A system according to claim 38, characterized in that said device (3) for assisting in following a flight path comprises:

- third means (18) for determining any lateral deviation of the airplane in the horizontal plane from a flight path segment, and for determining tolerated lateral margins on either side of said flight path segment in the horizontal plane; and
- second means (5) suitable for presenting the following on a display screen (6):
- a constant lateral deviation scale (20);

• fourth indicator means (22) for indicating actual lateral deviation, corresponding to a straight line segment (23) provided on said scale (20) and illustrating the actual lateral deviation of the airplane relative to the flight path segment (S3) to be followed; and

5 • fifth indicator means (24) for indicating excessive lateral deviation, which fifth means appear on said scale when the airplane is approaching one of said lateral margins and is at a predetermined distance therefrom.

40. (New) A system according to claim 39, characterized in that said constant scale (20) presents a size that is constant during all stages of airplane flight, by automatically adjusting
10 the ratio between distances and their representations on the display screen (6).

41. (New) A system according to claim 40, characterized in that said straight line segment (23) of said fourth indicator means (22) may be inclined.

42. (New) A system according to claim 11, characterized in that said fourth indicator means (22) changes shape on reaching its limit.

15 43. (New) A system according to claim 42, characterized in that said fifth indicator means (24) flashes.

44. (New) A system according to claim 13, for assisting in interception and following a flight path (T) that comprises a plurality of segments (S1, S2, S3, S4), the system being characterized in that said second display means (5) further presents on said display screen (6)
20 a sixth indicator means for indicating change of segment in the flight path to be followed.

45. (New) A system according to claim 44, characterized in that said second display means (5) further presents on said display screen (6) a seventh indicator means (28) for indicating any tendency to lateral drift speed.

46. (New) A system according to claim 45, characterized in that said first display means (5) of the device (1) for assisting in intercepting a flight path, and said second display means (5) of the device (3) for assisting in following a flight path, form parts of a single display unit (5).

5 47. (New) A system according to claim 46, characterized in that it further comprises information transmission means (37) suitable for simultaneously connecting said first means (4) of said device (1) for assisting in intercepting a flight path and said third means (18) of said device (3) for assisting in following a flight path to an automatic pilot (36) of the airplane, in order to transmit information.

10 48. (New) A device according to claim 32, characterized in that said circular arc (15, 15A, 15B) of the third indicator means (14) has a radius (R) that depends on the speed of the airplane.

15 49. (New) A device according to claim 31, characterized in that said circular arc (15, 15A, 15B) of the third indicator means (14) has a radius that depends on the capabilities of the airplane.

50. (New) A device according to claim 32, characterized in that said circular arc (15, 15A, 15B) of the third indicator means (14) has a radius that depends on the capabilities of the airplane.

20 51. (New) A device according to claim 31, characterized in that said circular arc (15, 15A, 15B) of the third indicator means (14) is capable of being deformed to take account of wind strength.

52. (New) A device according to claim 31, characterized in that said first display means (5) presents said third indicator means (14) on said display screen (6), solely:

- if a segment (S3) of the flight path (T) is to be found in the direction of said second rectilinear section (13) of the second indicator means (12);
- if said segment (S3) is situated at a distance that is less than a predetermined distance from said second rectilinear section (13); and
- if the flight-plan constraints make an interception maneuver possible.

53. (New) A device according to claim 31, characterized in that further comprises second means (16) for detecting an obstacle, said first display means (5) being additionally capable of presenting on said display screen (6) at least one second symbol (17) illustrating the position of said obstacle in said horizontal plane.

54. (New) A system according to claim 39, characterized in that said straight segment (23) of said fourth indicator means (22) may be inclined.

55. (New) A system according to claim 39, characterized in that said fourth indicator means (22) changes shape on reaching its limit.

56. (New) A system according to claim 39, characterized in that said fifth indicator means (24) flashes.

57. (New) A system according to claim 39, for assisting in interception and following a flight path (T) that comprises a plurality of segments (S1,S2,S3,S4), the system being characterized in that said second display means (5) further presents on said display screen (6) a sixth indicator means for indicating change of segment in the flight path to be followed.

58. (New) A system according to claim 39, characterized in that said second display means (5) further presents on said display screen (6) a seventh indicator means (28) for indicating any tendency to lateral drift speed.

59. (New) A system according to claim 39, characterized in that said first display means (5) of the device (1) for assisting in intercepting a flight path, and said second display means (5) of the device (3) for assisting in following a flight path, forms parts of a single display unit (5).

5 60. (New) A system according to claim 39, characterized in that it further comprises information transmission means (37) suitable for simultaneously connecting said first means (4) of said device (1) for assisting in intercepting a flight path and said third means (18) of said device (3) for assisting in following a flight path to an automatic pilot (36) of the airplane, in order to transmit information.